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Next Generation Sustainability Metrics

A Context-Based Understanding of Workforce Diversity

2020 TECHNICAL REPORT

Next Generation Sustainability Metrics

A Context-Based Understanding of Workforce Diversity

EPRI Project Managers
T. Gorgian
M. Scott

ELECTRIC POWER RESEARCH INSTITUTE

3420 Hillview Avenue
Palo Alto, CA 94304-1338
USA

PO Box 10412
Palo Alto, CA 94303-0813
USA

800.313.3774
650.855.2121

askepri@epri.com

www.epri.com

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Principal Investigators
T. Gorgian
M. Scott

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Abstract

Diversity and Inclusion is increasingly viewed as not just a societal imperative, but a business imperative. Workforce diversity's relationship to broader issues of social justice, socioeconomic inclusion, and equal opportunity is no longer highlighted solely by activists, but is moving to the forefront of corporate agendas and the minds of employees and customers alike. There is a need for more technical metrics that can provide an enhanced understanding of workforce diversity beyond the percentage share metrics (e.g., minority share of the workforce) that are currently widely reported by many companies and used by sustainability rating and ranking organizations to compare companies with vastly different underlying demographic compositions. Context-based analysis of workforce diversity can help illuminate the intersection of a company's workforce, its labor force, and its larger community, and serve as a more valuable input to strategic decision making. This research seeks to provide electric power companies with a practical foundation for utilizing a context-based analytical approach for measuring and interpreting performance on workforce diversity.

The results of the analysis on minority diversity are presented sequentially to better highlight the key pieces of information provided by each pilot metric and its corresponding conventional metric. The results highlight how accounting for context can change the interpretation of relative performance when viewing benchmarking results, particularly when analyzing minority and gender diversity, and that using all the metrics presented in this report together can provide more strategic insights than using any one in isolation.

Keywords
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PRIMARY AUDIENCE: Sustainability; diversity and inclusion; and human resources professionals within electric power companies seeking a deeper understanding of company workforce diversity.

SECONDARY AUDIENCE: Electric power company stakeholders who may be interested in learning more about workforce and community diversity, inclusion, and equity.

KEY RESEARCH QUESTION

An increasing number of electric power companies seek to promote diversity, inclusion, and equity, in part by aiming to employ a workforce that is reflective of the communities they serve. However, traditional comparisons of workforce diversity percentages without consideration of the demographic composition of the available pool of labor or population can lead to incomplete and potentially misleading conclusions about a company's performance, both in isolation and relative to peers. This research seeks to provide electric power companies with a practical foundation for utilizing a context-based analytical approach for measuring and interpreting performance on workforce diversity. The application of the approach and metrics presented in this report can provide companies enhanced insights to inform workforce diversity and equity strategy and business planning, above and beyond the information provided by more conventional benchmarking metrics (e.g., minority share of the workforce).

RESEARCH OVERVIEW

This research builds upon work completed in 2019 entitled *Context-Based Metrics (CBMs): Outlining Foundational Considerations and Summarizing Implementation Efforts* (3002013456) [1], and was conducted in six phases.

Phase 1: Conceptual Considerations of CBA and CBMs for Workforce Diversity

The first phase of the project involved developing a better understanding the key conceptual considerations of context-based analysis (CBA) and context-based metrics (CBMs) for electric power company workforce diversity in order to identify and evolve pilot metrics:

- Racial/ethnic, gender, and age diversity were the chosen applications for this pilot.
- Past discussions with sustainability representatives highlighted a frequently stated goal of an electric power company's workforce being "reflective of the communities we serve." This theme demonstrates the need for context-based workforce diversity metrics, but along with recognition of the utility business model, also underscores that the service territory is the most intuitive and appropriate spatial dimension in which to contextualize an electric power company's workforce diversity.
- The labor force is the major mechanism by which a company can obtain workers from within the community, and in turn, become reflective of that broader community. Therefore, the pilot context-based workforce diversity metrics were developed based on the diversity of the labor force within a given service territory rather than the diversity of the overall population. This approach is consistent with the context-based workforce diversity metric (the VA Diversity Index) developed by the United

States Department of Veterans Affairs (VA) [2] [3], which measures the degree of convergence between the demographic composition of their workforce (by race, ethnicity, and gender) and the demographic composition of the United States' civilian labor force. The VA's Diversity Index validated the pilot metrics developed through this research.

Pilot Metrics

Table ES-1 presents the pilot metrics and their associated equations used to calculate them. As shown in the "Key Findings" below, the interpretation and key insights provided by one class of pilot metrics (e.g., delta) applied to one dimension of diversity (e.g., minority), can be directly carried over to another dimension (e.g., gender delta).

Table ES-1
Pilot metrics and associated equations

Metric Name	Equation
Minority Delta (MD)	$MD = \frac{\#\ of\ minority\ employees}{Average\ \#\ of\ employees} - \frac{Minority\ LFP\ in\ service\ territory}{Total\ LFP\ in\ service\ territory}$
Minority Differential Rate (MDR)	$MDR = \frac{\#\ of\ minority\ employees}{Average\ \#\ of\ employees} \div \frac{Minority\ LFP\ in\ service\ territory}{Total\ LFP\ in\ service\ territory}$
Inverse Minority Differential Rate (MDR^{-1})	$MDR^{-1} = \frac{1}{MDR}$
Gender Delta (GD)	$GD = \frac{\#\ of\ female\ employees}{Average\ \#\ of\ employees} - \frac{LFP\ for\ women\ 20{-}64\ in\ service\ territory}{LFP\ for\ 20{-}64\ year\ olds\ in\ servivce\ territory}$
Gender Differential Rate	$GDR = \frac{\#\ of\ female\ employees}{Average\ \#\ of\ employees} \div \frac{LFP\ for\ women\ 20{-}64\ in\ service\ territory}{LFP\ for\ 20{-}64\ year\ olds\ in\ service\ territory}$
Age Delta (AD_j)	$AD_j = \frac{\#\ of\ employees\ in\ age\ cohort\ j}{Average\ \#\ of\ employees} \div \frac{LFP\ for\ age\ cohort\ j\ in\ service\ territory}{Total\ LFP\ in\ service\ territory}$
Age Differential Rate (ADR_j)	$ADR_j = \frac{\#\ of\ employees\ in\ age\ cohort\ j}{Average\ \#\ of\ employees} \div \frac{LFP\ for\ age\ cohort\ j\ in\ service\ territory}{Total\ LFP\ in\ service\ territory}$

Phases 2, 3, and 4: Collect Company Data, Service Territory Demographic and Economic Data to Generate Key Variables

Participating companies in EPRI's Strategic Sustainability Science program (P198) were asked to provide a county level service territory listing, the average number of employees during 2018, the number of employees who met the definition of "minority," total number of female employees, and total number of employees by nine different age cohorts beginning at 16-19 and ending at 65-74. Ten companies provided data for the pilot. No distinction was made between the rank or position of the employees (e.g., executive versus line worker).

EPRI obtained five-year labor force participation rate (LFPR) and population estimates from the Census Bureau's American Community Survey (ACS) table S2301 [4] to prepare for the calculation of the pilot metrics. The ACS 5-year estimates were chosen for their availability at the county level, detailed demographic

breakout, and statistical accuracy. Data were collected for each of the counties comprising a company's service territory. Key labor force variables were generated to prepare for the calculation of the pilot metrics.

Each LFPR estimate was multiplied by the relevant total population figure to convert the county level rate estimates (i.e., the LFPR) to level estimates (i.e., LFP) for each population group, women aged 20-64, and age cohort. This allows for summation enabling the calculation of all the pilot metrics.

Phases 5 and 6: Calculate Pilot Metrics and Summarize Results

Phase 5 involved calculating each pilot metric for each of the 10 participating companies using the final dataset created in Phase 4. The results from all 10 companies were anonymized, compiled and summarized. Benchmarking results were sorted sequentially by the conventional share-based metrics and the corresponding pilot metrics to understand how interpretations of relative performance change when including the pilot metrics, and the key information provided by each metric.

KEY FINDINGS

The traditional minority share of the workforce metric presents a viable and informative starting point for measuring workforce diversity around minorities, where the measurement is exclusively internally focused. The Minority Delta (MD) introduces context by accounting for the diversity of the local labor force, allowing the user to understand the absolute "gap" between the minority share of the workforce and that of the labor force. The Minority Differential Rate (MDR) provides an alternative and deeper examination of the "gap" identified by the MD through its multiplicative properties, which allows the user to quantify the relative magnitude of minority under/overrepresentation. The *Inverse Minority Differential Rate (*MDR^{-1}) builds on the information provided by the MDR to indicate how much a company would need to increase current minority representation to close the gap identified by MD, and become completely reflective of the local labor force, as indicated by the MDR.

Figure ES-1 presents the results from the analysis of minority diversity. The figure shows the conventional minority share of the workforce metric (green) and the MD (orange) and MDR (royal blue) pilot metrics. All companies with an MDR^{-1} of 0.5 or less are highlighted in light blue. The figure highlights how incorporating context into the measurement of workforce diversity can alter interpretations of performance by accounting for demographic and economic conditions that are omitted by conventional, internally focused share-based metrics. Further, using all the metrics together can provide more robust insights than using any one in isolation.

Company 5's originally benchmarked position moved the most when its workforce is considered in context of its service territory – despite having a 24% minority share of the workforce. They register a relatively low MD of -3%, and further, an MDR of 0.89. This indicates that while Company 5 would be considered less diverse than companies 3 and 4 when tracking only the minority share of the workforce metric, they are actually a "leading" performer when viewing their performance within the context of their local labor force. They have achieved a relatively small minority share gap (as shown by the low MD value) and near equal relative minority representation (as shown by the large MDR value). Company 7 and Company 10 also "improve" to sixth, and ninth, respectively. In contrast, Company 3 and Company 6 move to fourth and seventh positions, respectively.

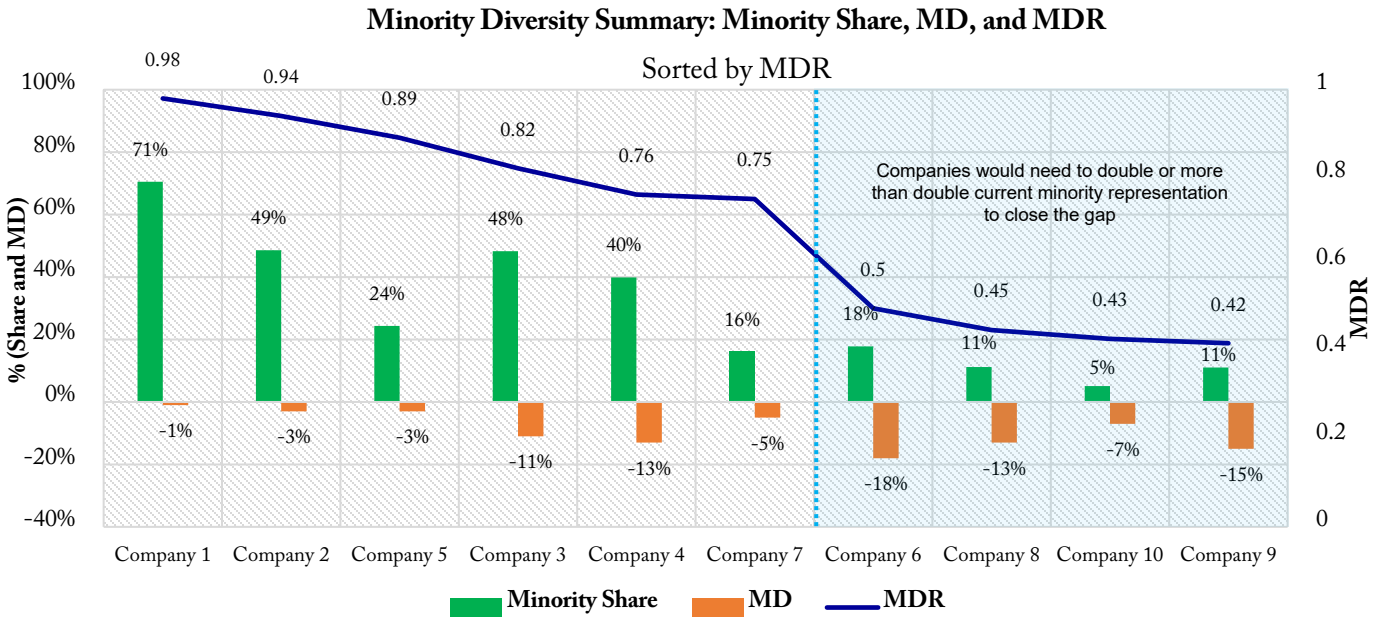

Figure ES-1
Minority diversity summary: conventional share-based metric + MD pilot metric + MDR pilot metric

Table ES-2 summarizes the interpretation using Company 6's values for minority diversity as an example. These interpretations can be directly carried over to gender and age diversity.

Table ES-2
Summary of conventional and context-based workforce diversity metrics

Metric	Information Provided	Example Interpretation Using Company 6
Minority share of the workforce	The minority share of the company's workforce	18% of Company 6's employees are minority.
MD	The absolute "gap" between the minority share of the company's workforce and the minority share of their local labor force	The percentage of minority employees at Company 6 is 18% less than the percentage of minorities in their local labor force.
MDR	The magnitude of over/underrepresentation of minorities in a company's workforce, relative to their local force	The proportion of minority employees at Company 6 is 50% of the proportion of minorities in their local labor force (i.e., the company would need to double its current minority workforce to reflect the share of the service territories' workforce). The minority composition of Company 6's workforce is 50% less than [=(1-MDR)*100] the minority composition of their local labor force.
MDR^{-1}	The amount by which a company would need to increase current minority representation to close the "gap" identified by MD and achieve equal representation as would be identified by an MDR of 1.	Company 6 would need to double the current composition of minority employees to "close the gap" and achieve equal representation.

WHY THIS MATTERS

Diversity and Inclusion is increasingly viewed as not just a societal imperative, but a business imperative. Workforce diversity's relationship to broader issues of social justice, socioeconomic inclusion, and equal opportunity is no longer highlighted solely by activists, but is moving to the forefront of corporate agendas and the minds of employees and customers alike. There is a need for more technical metrics that can provide an enhanced understanding of workforce diversity beyond the percentage share metrics (e.g., minority share of the workforce) that are currently widely reported by many companies and used by sustainability rating and ranking organizations to compare companies with vastly different underlying demographic compositions. Context-based analysis of workforce diversity can help illuminate the intersection of a company's workforce, its labor force, and its larger community, and serve as a more valuable input to strategic decision making.

HOW TO APPLY RESULTS

In the spirit of strategically embedding sustainability within a company, the application of this research requires collaboration with multiple internal stakeholders, including upper management and executives. A company's diversity and inclusion staff may incorporate the metrics presented in this report into existing or new performance tracking efforts with engagement from sustainability staff. After results have been analyzed, diversity and inclusion and human resources staff may work together to identify key insights that can be used to inform decisions to engage with community, educational, and/or professional partnerships that can foster workforce diversity by promoting socioeconomic inclusion in their communities. Communications and investor relations staff may communicate these key insights externally.

LEARNING AND ENGAGEMENT OPPORTUNITIES

- *Context-Based Metrics (CBMs): Outlining Foundational Considerations and Summarizing Implementation Efforts*. EPRI, Palo Alto, CA: 2019. 3002013456.
- *2020 Metrics to Benchmark Electric Power Company Sustainability Performance*. EPRI, Palo Alto, CA: 2019. 3002019251.
- *2019 State of the Metric: Summary of Learnings from Sustainability Metrics Research*. EPRI, Palo Alto, CA: 2019. 3002016114.
- *Next Generation Sustainability Metrics: Establishing a Foundation for Understanding and Measuring Impact.* EPRI, Palo Alto, CA: 2019. 3002019245 (forthcoming).
- *Evaluation of Water Management Metrics for the Electric Power Sector*. EPRI, Palo Alto, CA: 2015. 3002006245.
- *Priority Sustainability Issues for the North American Electric Power Industry: Results of Research with Electric Power Companies and Stakeholders in the United States and Canada.* EPRI, Palo Alto, CA: 2017. 3002011444.
- EPRI Sustainability Homepage: http://www.epri.com/sustainability

EXECUTIVE SUMMARY

EPRI CONTACTS: Todd Gorgian, Sustainability Analyst, tgorgian@epri.com and Morgan Scott, Sustainability Research Manager, mmscott@epri.com

PROGRAM: Strategic Sustainability Science, P198

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Electric Power Research Institute
3420 Hillview Avenue, Palo Alto, California 94304-1338 • PO Box 10412, Palo Alto, California 94303-0813 USA
800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com

List of Abbreviations

ACS	American Community Survey
AD_j	age delta for age cohort *j*
ADR_j	age differential rate for age cohort *j*
BLS	Bureau of Labor Statistics
CBA	context-based analysis
CBMs	context-based metrics
CLF	civilian labor force
ESIG	Energy Sustainability Interest Group
GD	gender delta
IBA	impact-based analysis
IBMs	impact-based metrics
LAUS	Local Area Unemployment Statistics
LFP	labor force participation
LFPR	labor force participation rate
MD	minority delta
MDR	minority differential rate
MDR^{-1}	inverse minority differential rate
SMEs	subject matter experts
VA	Veterans Affairs

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Section 1: Introduction and Research Motivation

Diversity is often viewed as having two – primary and secondary – dimensions. The primary dimensions of diversity are those that are either inborn or exert extraordinary influence on early socialization; dimensions of this type are age, ethnicity, gender, physical or mental abilities, race, and sexual orientation. Secondary dimensions of diversity include factors that are important to us as individuals and to some extent define us to others but which are less permanent and can be adapted or changed such as: educational background, geographic location, income, marital status, military experience, parental status, religious beliefs, and work experience [5] [6].

Diversity and Inclusion is increasingly becoming not just a societal imperative but a business imperative.

There is a body of literature studying the effects of workforce diversity on worker and organizational productivity [7]. Much of this research has been conducted by organizational management and human resources scholars and professionals, who have evaluated workforce diversity sometimes exclusively as an aspect of human capital and as a potential source of competitive advantage – a diverse workforce can ensure strategic utilization of human resources for the accomplishment of company goals. However, Diversity and Inclusion is increasingly viewed as not just a societal imperative, but a business imperative. Workforce diversity's relationship to broader issues of social justice, socioeconomic inclusion, and equal opportunity is no longer highlighted solely by activists, but is moving to the forefront of corporate agendas and the minds of employees and customers alike. There is a need for more technical metrics that can provide an enhanced understanding of workforce diversity beyond the percentage share metrics (e.g., minority share of the workforce) that are currently widely reported by many companies and used by sustainability rating and ranking organizations to compare companies with vastly different underlying demographic compositions. Next generation context-based workforce diversity metrics can provide a stronger strategic input for electric power companies seeking to better understand the extent to which its workforce reflects the diversity of the communities it serves. This understanding can help identify opportunities to create greater value for their business and their communities.

Context-based workforce diversity metrics can provide a stronger strategic input for electric power companies seeking to better understand the extent to which its workforce reflects the diversity of the communities it serves.

EPRI Research on Workforce Diversity, Inclusion and Equal Opportunity Benchmarking Metrics

Through its Energy Sustainability Interest Group (ESIG) consisting of roughly 40 companies per year, EPRI has been producing resources and advancing discussions that have enhanced the understanding of sustainability performance and benchmarking throughout the electric power industry since 2014. Each year, EPRI publishes a publicly available list of "Metrics to Benchmark Electric Power Company Sustainability Performance." These metrics have been evaluated by both EPRI researchers and subject matter experts (SMEs) as well as sustainability practitioners and SMEs from ESIG participating companies and are considered technically valid for benchmarking sustainability performance. Six annual metrics lists have been published through ESIG [8] [9] [10] [11] [12] [13], in addition to several other research deliverables.[1]

EPRI research has identified 10 benchmarking metrics within the Workforce Diversity, Inclusion and Equal Opportunity priority issue area as of 2020 (see 2019 *State of the Metric: Summary of Learnings from Sustainability Metrics Research* (3002016114) [14]). The numerators and denominators of these 10 metrics are listed in Table 1-1. While diversity, inclusion and equal opportunity are grouped into one priority issue, each dimension is unique and therefore requires different metrics. Workforce diversity refers to the makeup of a workforce, and can span demographics (e.g., race/ethnicity, gender, age, sexual orientation) but also perspective and experience. Inclusion is arguably more challenging to measure as it refers to a work environment and culture that enables diversity to thrive. Equal opportunity refers to ensuring that all workers are treated fairly and consistently. Diversity is the focus of this research and report.

Conventional comparisons of workforce diversity percentages without consideration of the demographic composition of the available pool of labor or population can lead to incomplete and potentially misleading conclusions.

All 10 metrics shown in Table 1-1 are largely focused on capturing the share of a company's workforce, leadership structure, and board that belong to several "diverse" population groups – minority[2], female[3], and veteran. While these metrics have and will continue to be valuable for benchmarking and company diversity efforts, conventional comparisons of workforce diversity percentages without consideration of the demographic composition of the available pool of labor or population can lead to incomplete and potentially misleading conclusions about a company's performance, both in isolation and relative to peers. Further, these percentages are not well suited to provide the depth of information needed

[1] *Refer to 2019 State of the Metric: Summary of Learnings from Sustainability Metrics Research* (3002016114) [14] for a complete overview of ESIG's metrics research.

[2] Meet the definition of "minority," which is presented in Section 2. The boundaries of these metrics may be refined to better align with Equal Employment Opportunity (EEO) reporting, whereby typically, human resource staff generate a report from their Human Resource Information System that provides information on how employees have *identified* themselves as it relates to race, gender and disability.

[3] Identify as female.

to inform strategic company decisions focused on promoting diversity and maximizing the potential of a diverse workforce. Electric power companies may need to contextualize their performance on workforce diversity within the socioeconomic systems in which they operate and impact.

Table 1-1
Workforce diversity, inclusion and equal opportunity benchmarking metrics

Metric Name	Calculation
Employee diversity: minority share of workforce	Numerator: Number of minority employees. Denominator: Average number of employees in the data year.
Employee diversity: minority share of executive or senior level officials	Numerator: Number of minority employees in an executive/senior level position. Denominator: Total number of executive/senior level officials.
Employee diversity: minority share of career development advancements	Numerator: Number of minority employee career development advancements. Denominator: Total number of career development advancements.
Employee diversity: women share of workforce	Numerator: Number of employees who identify as female. Denominator: Average number of employees in the data year.
Employee diversity: women share of executive or senior level officials.	Numerator: Number of female employees in an executive/senior level position. Denominator: Total number of executive/senior level officials.
Employee diversity: women share of career development advancements	Numerator: Number of female employee career development advancements. Denominator: Total number of career development advancements.
Military workforce	Numerator: Number of employees that are active military or veteran status. Denominator: Average number of employees in the data year.
Minority share of Board members	Numerator: Number of minority Board members. Denominator: Number of Board members.
Women share of Board members	Numerator: Number of female Board members. Denominator: Number of Board members.

Next Generation Metrics: EPRI Research on Context- and Impact-based Metrics

EPRI's Strategic Sustainability Science research program (P198) was established in 2018 to create the tools and resources that support an electric power company in taking their sustainability program to the next level of maturity, embedding a triple bottom line[4] mindset throughout their companies and supporting an economy that balances environmental, social, and economic concerns in their service territories. Context-based analysis (CBA), context-based metrics (CBMs), impact-based analysis (IBA), and impact-based metrics (IBMs) are being explored as part of P198's research. This report is an update of P198's inaugural research effort on CBA and CBMs entitled *Context-Based Metrics (CBMs): Outlining Foundational Considerations and Summarizing Implementation Efforts* (3002013456) [15]. That report identified three key insights on CBA and CBMs and applied them to develop pilot CBMs for electric power company water management. That report found that CBA and CBMs consist of the following considerations:

1. A system that defines the boundaries of an activity (e.g., a river).
2. Threshold at which a sustainable level of activity can occur (e.g., water consumption).
3. Allocation of activity across stakeholders (e.g., water consumers).

Context-based analysis and context-based metrics require assessing company performance or actions in relation to the conditions or systems within which a company operates (e.g., hydrological conditions, demographic conditions, economic conditions).

Regardless of the setting in which they are being applied (e.g., to water and natural capital, to company workforce and human capital) CBA and CBMs fundamentally require assessing company performance or actions in relation to the conditions or systems within which a company operates (e.g., hydrological conditions, demographic conditions, economic conditions). Accounting for these conditions or systems makes CBA and CBMs more challenging to undertake and interpret than more conventional analysis using benchmarking metrics.

Research Motivation

Electric power companies have long-established relationships with the customers and communities they serve and operate in, and many are seeking to better understand how to measure and track workforce diversity to build a more innovative workforce and promote equity, both internally and within their communities. Thus, a contextualized view of workforce diversity, and possibly other social sustainability issues, not only lends itself easily to electric power companies, but is also necessary for a more complete understanding of performance that can inform strategy development. The purpose of this research is to provide electric power companies a practical foundation for utilizing a context-based analytical approach for measuring and interpreting performance on workforce diversity. The application of the approach and metrics presented in the

The purpose of this research is to provide electric power companies a practical foundation for utilizing a context-based analytical approach for measuring and interpreting performance on workforce diversity.

[4] A triple bottom line mindset goes beyond the traditional measures of profits, return on investment, and shareholder value to include environmental and social dimensions.

remainder of this report can provide companies enhanced insights to inform workforce diversity and equity strategy, above and beyond the information provided by more traditional benchmarking metrics (e.g., minority share of the workforce).

The findings from companion research on IBA and IBMs can be found in a separate report entitled *Next Generation Sustainability Metrics: Establishing a Foundation for Understanding and Measuring Impact* (3002019245)[5] [16].

[5] Forthcoming

Section 2: Methodology

This research was carried out in multiple phases and in collaboration with participating companies in EPRI's Strategic Sustainability Science program (P198).

Phase 1: Conceptual Considerations of CBA and CBMs for Workforce Diversity

The first phase of the project involved better understanding the key conceptual considerations of CBA and CBMs for electric power company workforce diversity in order to develop the pilot metrics. These considerations included:

- Which dimensions of diversity should be focused on for this inaugural research effort?
- What is the "context" in which we can analyze an electric power company's workforce diversity?
- Is it more technically valid to contextualize workforce diversity over the demographics of the overall population or a segment(s) of the population?

Racial/ethnic, gender, and age diversity were the chosen dimensions of diversity analyzed for this pilot.

Racial/ethnic, gender, and age diversity were the chosen applications for this pilot. These dimensions of diversity are among the most heavily discussed across industries, particularly considering recent events highlighting the role of business in promoting justice and equity. Additionally, these dimensions are most commonly tracked by companies and have long been of interest to various stakeholders, including regulators, customers, investors, employees, and community groups.

The service territory was chosen as the proper context to analyze workforce diversity for an electric power company – how reflective the company's workforce is of the communities they serve.

Many companies, including electric power companies, have disclosed the diversity of their workforces in relation to national demographics in public facing venues, such as websites or reports. These disclosures are often carried out in accordance with Employer Information Report EEO-1 reporting and comprised of workforce numbers (e.g., percentage of African Americans in the workforce) presented next to national demographic numbers (e.g., percentage of African Americans in the national or state population) [17] [18] [19] without any direct, context-based measurement of how the workforce differs from the reference population. Past discussions with sustainability representatives highlighted a frequently stated goal of an electric power company's workforce being "reflective of the communities we serve." This theme demonstrates the need for context-based workforce diversity metrics, but along with recognition of the utility business model, also underscores that the service territory is the most intuitive

and appropriate dimension in which to contextualize an electric power company's workforce diversity. Additionally, these company disclosures highlight that extra steps (e.g., making a calculation using workforce and reference population data) and extra effort (e.g., obtaining more localized reference population data) can be taken to formalize existing disclosure into recurring analytical processes that could enhance the strategic value of undertaking such measurement.

The pilot metrics developed are based on the diversity of the local labor force. The labor force is the major mechanism by which a company can obtain workers from within the community, and in turn, become reflective of that broader community.

Many factors can influence the extent to which an electric power company "reflects" its communities, including recruitment and hiring practices. It is out of the scope of this research to discuss these factors that extend beyond contextual diversity. However, a key consideration is that just as a company in a less diverse area will find it more difficult to develop and maintain a diverse workforce, a company cannot become reflective of the communities it serves if diverse individuals within the community do not participate in the labor force (e.g., not of working age, retired, ill, full-time student, discouraged worker[6]). The labor force is the major mechanism by which a company can obtain workers from within the community, and in turn, become reflective of that broader community. Therefore, it was determined for the purposes of this research more technically sound to develop context-based workforce diversity metrics based on the diversity of the labor force within a given service territory rather than the diversity of the overall population.

This approach is consistent with the context-based workforce diversity metric developed by the United States Department of Veterans Affairs (VA) [3] entitled the VA Diversity Index. The VA's uses their Diversity Index as part of their Diversity and Inclusion Strategic Plan [2] to measure the degree of *convergence* between the composition of their workforce (by race, ethnicity, and gender) and the composition of the United States' civilian labor force (CLF). The VA's Diversity Index validated the pilot metrics developed through this research. The implications of basing the pilot metrics on labor force participation (LFP) – the segment of the population that is either employed or actively seeking employment - is discussed further in the Phase 4 description.

Pilot Metrics

The pilot metrics are consistent with the U.S. Department of Veterans Affairs Diversity Index, but not identical.

Each pilot metric is presented below along with its equation and an example numerical interpretation. Note that the following explanations refer to the equation number that can be found in parentheses to the right of the equation. As will be demonstrated, the interpretation for the same metric type (i.e., delta, differential rate) applies across any dimension of diversity included in the analysis (i.e., minority, gender, age). Table 2-1 provides a summary of all the pilot metrics.

[6] A discouraged worker is one who has given up the job search because of perceived poor prospects—the chance of getting a job is viewed as too low to justify the effort needed to find it.

Section 3 sequentially presents the aggregate results for each conventional share-based metric (e.g., women share of the workforce) and its corresponding pilot metrics (e.g., Gender Delta) to highlight key insights provided by each additional metric.

Minority Delta (MD)

The Minority Delta (MD) measures the absolute difference between the percentage of minorities in a company's workforce and the percentage of minorities in the local labor force.

The Minority Delta (MD) measures the absolute difference between the percentage of minorities in a company's workforce and the percentage of minorities in the local labor force. Negative values indicate that the workforce has a smaller share of minorities than the labor force, while positive values indicate that the workforce has a larger share of minorities than the labor force. A smaller value (in absolute value) indicates a smaller gap.

The MD metric can help companies better understand the difference between the percentage of minorities in their workforce and a selected benchmark. The benchmark used for the MD pilot metric is the local CLF. Equation 1A provides a general formulation of the MD. Equation 1B provides a more detailed equation that lays out each component involved in the calculation of the MD.

For the purposes of this research, "minority" is defined according to the United States Equal Employment Opportunity Program (EEO) [20]:

> *The smaller part of a group. A group within a country or state that differs in race, religion or national origin from the dominant group. According to EEOC guidelines, minority is used to mean four particular groups who share a race, color or national origin.*
>
> *These groups are:*
>
> - *American Indian or Alaskan Native. A person having origins in any of the original peoples of North America, and who maintain their culture through a tribe or community.*
> - *Asian or Pacific Islander. A person having origins in any of the original people of the Far East, Southeast Asia, India, or the Pacific Islands. These areas include, for example, China, India, Korea, the Philippine Islands, and Samoa.*
> - *Black (except Hispanic). A person having origins in any of the black racial groups of Africa.*
> - *Hispanic. A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.*

$$MD = \frac{\#\ of\ minority\ employees}{Average\ \#\ of\ employees} - \frac{Minority\ LFP\ in\ service\ territory}{Total\ LFP\ in\ service\ territory} \quad (1A)$$

$$MD = \frac{m}{\overline{emp}} - \frac{\sum_{i=1}^{n}\sum_{k=1}^{n} x_{ik}}{\sum_{i=1}^{n} x_i} \quad (1B)$$

Where:
m = Number of minority employees
$\overline{emp}$ = Average number of employees
x = LFP among 16 years of age and older
i = County 1, ..., County n
k = Minority population group 1, ..., minority population group n

Minority Differential Rate (MDR)

The Minority Differential Rate (MDR) measures the extent of under or overrepresentation of minorities in a company's workforce, relative to the local labor force.

The Minority Differential Rate (MDR) measures the extent of under or overrepresentation of minorities in a company's workforce, relative to the local labor force. A value of 1 indicates equal representation, a value less than 1 indicates relative underrepresentation, and a value greater than 1 indicates relative overrepresentation. A smaller number indicates greater under or overrepresentation. For a more intuitive interpretation of the magnitude of difference between the minority composition of a company's workforce and its local labor force, subtract the value of the MDR from 1 and multiply by 100.

By dividing the proportion of minorities in the workforce by the proportion of minorities in the labor force, the MDR metric can track the minority composition of a company's workforce relative to the minority composition of the local CLF. The MDR directly complements the MD, as it provides a deeper measure of the magnitude of *relative* representation that builds on the absolute gap quantified by the MD. In other words, the MDR is the multiplicative version of the MD. Equation 2A provides a general formulation of the MDR. Equation 2B provides a more detailed equation that lays out each component involved in the calculation of the MDR.

$$MDR = \frac{\#\ of\ minority\ employees}{Average\ \#\ of\ employees} \div \frac{Minority\ LFP\ in\ service\ territory}{Total\ LFP\ in\ service\ territory} \quad (2A)$$

$$MDR = \frac{m}{\overline{emp}} \div \frac{\sum_{i=1}^{n}\sum_{k=1}^{n} x_{ik}}{\sum_{i=1}^{n} x_i} \quad (2B)$$

Where:
m = Number of minority employees
$\overline{emp}$ = Average number of employees
x = LFP among 16 years of age and older
i = County 1, ..., County n
k = Minority population group 1, ..., minority population group n

While interpreting the value of the MDR directly is informative, it may be more intuitive to subtract 1 from the MDR value. For example, if Company X registers an MDR value of 0.84, this would indicate that the minority composition of Company X's workforce is 84% of the minority composition of the local labor force. By subtracting 0.84 from 1 and multiplying by 100, the results would indicate that the minority composition of Company X's workforce is 16% *less than* the minority composition of their local labor force.

Inverse Minority Differential Rate (MDR-1)

The Inverse Minority Differential Rate (MDR^{-1}) measures how much the current minority representation would need be increased to close the "gap" identified by the MD metric and bring about equal relative representation as indicated by the MDR.

The Inverse Minority Differential Rate (MDR^{-1}) measures how much the current minority representation would need be increased to close the "gap" identified by the MD metric and bring about equal relative representation as would be identified by an MDR of 1.

$$MDR^{-1} = \frac{1}{MDR} \quad (3)$$

The MDR^{-1} is an extension of the MDR, building on its multiplicative properties. After viewing the minority share of the workforce metric, the MD and the MDR, the MDR^{-1} can be used to better express the remaining effort needed to reflect community diversity, as it indicates the magnitude of increase needed from the current minority representation to bring about convergence between the minority composition of the workforce and that of a local labor force. Equation 3 shows the equation for the MDR^{-1}. The equations for the inverse differential gender and age cohort rates are not presented below but would carry the same equation and interpretation as the MDR^{-1}.

The Gender Delta (GD) measures the absolute difference between the percentage of females in a company's workforce and the percentage of minorities in the local labor force.

Gender Delta (GD)

The Gender Delta (GD) measures the absolute difference between the percentage of females in a company's workforce and the percentage of minorities in the local labor force. Negative values indicate that the workforce has a smaller share of women than the labor force, while positive values indicate that the workforce has a larger share of women than the labor force. A smaller value (in absolute value) indicates a smaller gap.

The GD metric can help companies better understand the difference between the percentage of female employees in that company's workforce and a selected benchmark. The benchmark used for the GD pilot metric is the local CLF. Equation 4A provides a general formulation of the GD. Equation 4B provides a more detailed equation that lays out each component involved in the calculation of the GD. As further discussed in the Phase 3 description, county level LFP data for women was only available for women aged 20-64. Therefore, the GD (and GDR) incorporates women in this age group only, in contrast to the MD (and MDR), which incorporates all individuals aged 16+.

$$GD = \frac{\#\ of\ female\ employees}{Average\ \#\ of\ employees} - \frac{LFP\ for\ women\ 20{-}64\ in\ service\ territory}{LFP\ for\ 20{-}64\ year\ olds\ in\ servivce\ territory} \quad (4A)$$

$$GD = \frac{f}{\overline{emp}} - \frac{\sum_{i=1}^{n} w_i}{\sum_{i=1}^{n} s_i} \quad (4B)$$

Where:
f = Number of female employees
$\overline{emp}$ = Average number of employees
w = LFP among women $20-64$
s = LFP among all $20-64$ year olds
i = County $1, \ldots,$ County n

The Gender Differential Rate (GDR) measures the extent of under or overrepresentation of females in a company's workforce, relative to the local labor force.

Gender Differential Rate (GDR)

The Gender Differential Rate (GDR) measures the extent of under or overrepresentation of females in a company's workforce, relative to the local labor force. A value of 1 indicates equal representation, a value less than 1 indicates relative underrepresentation, and a value greater than 1 indicates relative overrepresentation. A smaller number indicates greater under or overrepresentation.

The GDR has the same mechanics as the MDR, and the same note on data availability as the GD. Equation 5A provides a general formulation of the GDR. Equation 5B provides a more detailed equation that lays out each component involved in the calculation of the GDR.

$$GDR = \frac{f}{\overline{emp}} \div \frac{\sum_{i=1}^{n} w_i}{\sum_{i=1}^{n} s_i} \quad (5A)$$

Where:
f = Number of female employees
$\overline{emp}$ = Average number of employees
w = LFP among women $20-64$
s = LFP among all $20-64$ year olds
i = County 1, … , County n

$$GDR = \frac{\#\ of\ female\ employees}{Average\ \#\ of\ employees} \div \frac{LFP\ for\ women\ 20{-}64\ in\ service\ territory}{LFP\ for\ 20{-}64\ year\ olds\ in\ service\ territory} \quad (5B)$$

Age Delta (AD)

The Age Delta (AD) measures the absolute difference between the percentage of employees within a given age cohort (e.g., 30-34) in a company's workforce and the percentage of individuals in the same cohort in the local labor force.

The Age Delta (AD) measures the absolute difference between the percentage of employees within a given age cohort (e.g., 30-34) in a company's workforce and the percentage of individuals in the same cohort in the local labor force. Negative values indicate that the workforce has a smaller share of individuals in that age cohort than the labor force, while positive values indicate that the workforce has a larger share than the labor force. A smaller value (in absolute value) indicates a smaller gap.

The AD metric can help companies better understand the difference between the percentage of that company's workforce within a given age cohort, *j*, and the local labor force. The nine age cohorts used in this research were adopted from the Census Bureau's detailed age groupings shown below:

- 16-19
- 20-24
- 25-29
- 30-34
- 35-44
- 45-54
- 55-59
- 60-64
- 65-74

Equation 6A provides a general formulation of the AD. Equation 6B provides a more detailed equation that lays out each component involved in the calculation of the AD.

$$AD_j = \frac{\#\ of\ employees\ in\ age\ cohort\ j}{Average\ \#\ of\ employees} \div \frac{LFP\ for\ age\ cohort\ j\ in\ service\ territory}{Total\ LFP\ in\ service\ territory} \quad (6A)$$

$$AD_j = \frac{d_j}{\overline{emp}} - \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} p_{ij}}{\sum_{i=1}^{n} x_i} \quad (6B)$$

Where:
d = Number of employees
$\overline{emp}$ = Average number of employees
p = LFP
x = LFP among 16 years of age and older
i = County 1, … , County n
j = Age cohort 1, … , age cohort n

Age Differential Rate (ADR)

The Age Differential Rate (ADR) measures the extent of under or overrepresentation of employees within a given age cohort (e.g., 30-34) in a company's workforce, relative to the local labor force.

The Age Differential Rate (ADR) measures the extent of under or overrepresentation of employees within a given age cohort (e.g., 30-34) in a company's workforce, relative to the local labor force. A value of 1 indicates equal representation, a value less than 1 indicates relative underrepresentation, and a value greater than 1 indicates relative overrepresentation. A smaller number indicates greater under or overrepresentation.

The ADR has the same mechanics as the MDR and GDR, and the same note on age cohorts as the AD. Equation 7A provides a general formulation of the ADR. Equation 7B provides a more detailed equation that lays out each component involved in the calculation of the ADR.

$$ADR_j = \frac{\#\ of\ employees\ in\ age\ cohort\ j}{Average\ \#\ of\ employees} \div \frac{LFP\ for\ age\ cohort\ j\ in\ service\ territory}{Total\ LFP\ in\ service\ territory} \quad (7A)$$

$$ADR_j = \frac{d_j}{\overline{emp}} \div \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} p_{ij}}{\sum_{i=1}^{n} x_i} \quad (7B)$$

Where:
d = Number of employees
$\overline{emp}$ = Average number of employees
p = LFP
x = LFP among 16 years of age and older
i = County 1, County 2, … , County n
j = Age cohort 1, age cohort 2, … , age cohort n

Phase 2: Collect Company Data

Participating companies in EPRI's Strategic Sustainability Science program (P198) were asked to provide the following information and data during Phase 2:

- County level service territory listing.
- Average # of employees during 2018.
- # of employees that meet the definition of "minority."
- # of employees that identify as female.
- # of employees that are 16-19 years of age.
- # of employees that are 20-24 years of age.
- # of employees that are 25-29 years of age.
- # of employees that are 30-34 years of age.
- # of employees that are 35-44 years of age.
- # of employees that are 45-54 years of age.
- # of employees that are 55-59 years of age.
- # of employees that are 60-64 years of age.
- # of employees that are 65-74 years of age.

Ten participating companies in EPRI's Strategic Sustainability Science program provided workforce data for the pilot. One company did not provide workforce data by age cohort.

The county level service territory listing was used to identify the company's local labor markets, or more broadly, the geographic areas where the company has the strongest labor market presence. The average number of employees in 2018 serves as the denominator to the workforce component of each pilot metric equation. As discussed further in the Phase 3 description, 2018 company data were asked for to exactly align temporally with the most recent full dataset available from the Census Bureau at the time this research was begun. As mentioned in the Phase 1 description, P198 members were asked to provide data on the number of employees who identify as female aligned with the gender diversity metrics detailed in *2020 Metrics to Benchmark Electric Power Company Sustainability Performance* (3002019251) [8] and all previous benchmarking metrics reports.

Ten companies provided data for the pilot. One company did not provide workforce data by age and was not incorporated into the age diversity analysis. No distinction was made between the rank or position of the employees (e.g., executive versus line worker). The implications of this lack of distinction for future research opportunities is presented in Section 4, in part due to the lack of corresponding county level demographic and economic data.

Five-year labor force participation rate (LFPR) and population estimates from the Census Bureau's American Community Survey (ACS) were obtained for the counties comprising the service territories of the 10 companies.

Phase 3: Collect Service Territory Demographic and Economic Data

EPRI collected population and labor force data for the counties comprising the service territories of the 10 participating companies during Phase 3. Five-year labor force participation rate (LFPR) and population estimates from the Census Bureau's American Community Survey (ACS) table S2301 [4] were collected to prepare for the calculation of the pilot metrics. Crucially, an individual's response to Census Bureau race questions are based upon self-identification – the Census Bureau does not tell individuals which boxes to mark or what heritage to write in [22].

The ACS 5-year estimates were chosen for their availability at the county level, detailed demographic breakout, and statistical accuracy. The 5-year estimates utilize 60 months of data collected on all geographic areas[7] to produce the most accurate statistical demographic, economic, social, and housing estimates. Appendix A contains a dataset dictionary that lists the strengths and weaknesses of various demographic and economic datasets available from the Census Bureau and Bureau of Labor Statistics (BLS) that electric power companies could use in addition to or instead of the data used in this pilot.

Phase 4: Merge Data and Generate Key Variables

To prepare for the calculation of the pilot metrics, company workforce and local labor force data were merged, and key labor force variables were generated during Phase 4.

The ACS 5-year estimates provide the LFPR (%), which cannot be directly used to calculate context-based diversity metrics when the unit of analysis is at the county level (i.e., service territory is broken out by county), as summing and dividing rates across different geographies would be infeasible. Therefore, each LFPR estimate was multiplied by the relevant total population figure to convert the county level rate estimates (i.e., the LFPR) to level estimates (i.e., the LFP) for each population group, women aged 20-64, and age cohort. This allowed for a summation that enabled calculation of the total minority 16+ LFP variable that served as a numerator in equations 1A-3, total women 20-64 LFP that served as a numerator in equations 4A-5B, and total LFP by age cohort that served as a numerator for equations 6A-7B.

This approach produced several key reminders about the data used to calculate the pilot metrics. First, the LFP data for all population groups or age cohorts may not sum to 100% due to rounding in the generation of the LFP variables. Second, the questionnaire used to develop the ACS estimates combines race and ethnicity questions. Therefore, the population groups may not be mutually exclusive [e.g., White alone; White alone, not Hispanic or Latino; Hispanic or

[7] The ACS also has 1-year estimates, which only collect data on areas with more than 60,000 people.

Latino origin (of any race)]. To address this, the difference between the LFP for *all individuals 16+* and the LFP for *White alone, not Hispanic 16+* population group was used to obtain an approximation of total minority LFP within a given county. That is, the LFP for Hispanics and all other minorities.

Phase 5: Calculate Pilot Metrics

Phase 5 involved calculating each pilot metric for each of the 10 participating companies using the final dataset created in Phase 4.

Phase 6: Summarize and Interpret Results

The results from all 10 companies were compiled and summarized. Benchmarking results were sorted sequentially by the conventional share-based metrics and the corresponding pilot metrics to understand how interpretations of relative performance change when including the pilot metrics, and the key information provided by each metric. The 10 participating companies were provided with their company-specific results, where all other company names were anonymized.

Five-year labor force participation rate (LFPR) and population estimates from the Census Bureau's American Community Survey (ACS) were obtained for the counties comprising the service territories of the 10 companies.

Section 3 presents the anonymized results for workforce minority, gender, and age diversity. The sequential sorting of benchmarking results is presented only for the analysis of minority diversity, as the more detailed interpretation of the metrics shown there can be directly carried over to gender and age diversity.

Section 3: Results and Implications

This section presents the results of the workforce diversity CBA pilot when utilizing conventional, share-based metrics and the corresponding context-based workforce diversity metrics described in Section 2. The benchmarking results are sequentially sorted to better illustrate the key information provided by each metric on its own, and when viewed in consideration of others. The minority diversity results are presented in detail. However, the interpretation of the share-based, delta, differential rate, and inverse differential rate metrics remain the same when also analyzing the gender and age dimensions of diversity. Further, for the age diversity metrics, only the results for the 25-29 and 60-64 age cohorts are presented, as both cohorts are important to both workforce diversity *and* workforce planning. Results for the other seven age cohorts are available upon request.

Minority Diversity

Part 1: Minority Share of the Workforce

The conventional minority share of the workforce metric indicates the percentage of total employees that meet the definition of "minority." This metric focuses only internally - on the company itself - and does not make any consideration of minority demographics within the company's service territory.

The value a company registers for the minority share of the workforce metric does not provide any information on how those companies' workforces resemble the communities they serve.

Figure 3-1 presents the results from the 10 participating companies for the conventional minority share of the workforce metric (see Section 2). The companies are numbered in descending order according to the magnitude of their minority share, reflecting that Company 1 has the largest minority share of the workforce and Company 10 the lowest. However, the value that a company registers for the minority share of the workforce metric only reflects the percentage of all employees that are minorities – no deeper information is provided on how those companies' workforces resemble the communities they serve, or for the purposes of this research, the local labor force. As will be shown with subsequent results, when considering context, a company with a lower minority share could in fact be more reflective of its local labor force than a company with a higher minority share.

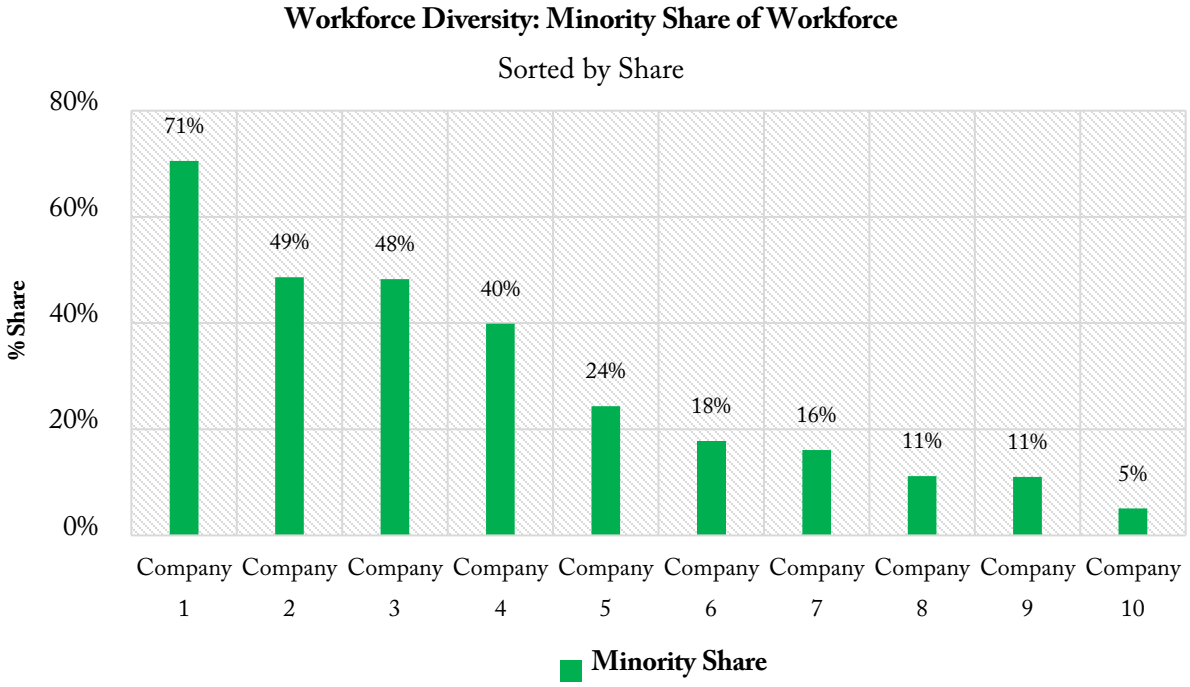

Figure 3-1
Minority diversity part 1: conventional share-based metric (sorted by share)

Part 2: Minority Share of the Workforce + MD

The MD metric measures the *absolute* difference between the percentage of minorities at the workforce and the percentage of minorities in the local labor force. The MD metric begins to incorporate context into an analysis of workforce diversity that is absent when using only the minority share of the workforce.

By incorporating information about the demographic makeup of the local labor force, the MD metric incorporates context into the analysis of workforce diversity that is absent when using only the minority share of the workforce. The MD quantifies the "gap" between a company's workforce and its local labor force.

Figure 3-2 shows both the conventional minority share of the workforce metric and the MD pilot metric. Figure 3-2 is sorted in descending order of the minority share of the workforce.

The MD metric begins to incorporate context and highlights that a company with a lower minority share could in fact be more reflective of its local labor force than a company with a higher minority share.

The sum of the absolute value of the MD and the minority share equals the minority share of the local labor force. For example, the minority share of the labor force within Company 6's service territory is 36% (18% minority share + 18% MD = 36% minority share of the labor force). Notably, the benchmarking results – and the interpretation of relative performance – would change were the 10 companies to be sorted in descending order of the MD metric (not shown in Figure 3-2). The performance of Companies 1 and 2 are robust in terms of the choice of metric to sort by, as Companies 1 and 2 would remain first and second,

respectively, even if the results were sorted by the MD metric. However, Company 5, Company 7, and Company 10 would all be more reflective of their communities, moving to the third, fourth, and fifth benchmarked positions respectively, if sorting by the MD metric. In contrast, Company 3, Company 4, and Company 6 would "drop" to sixth, seventh, and tenth place, respectively. This highlights the importance of accounting for context – looking external to the organization itself – when seeking to make more informed decisions on workforce diversity and equity.

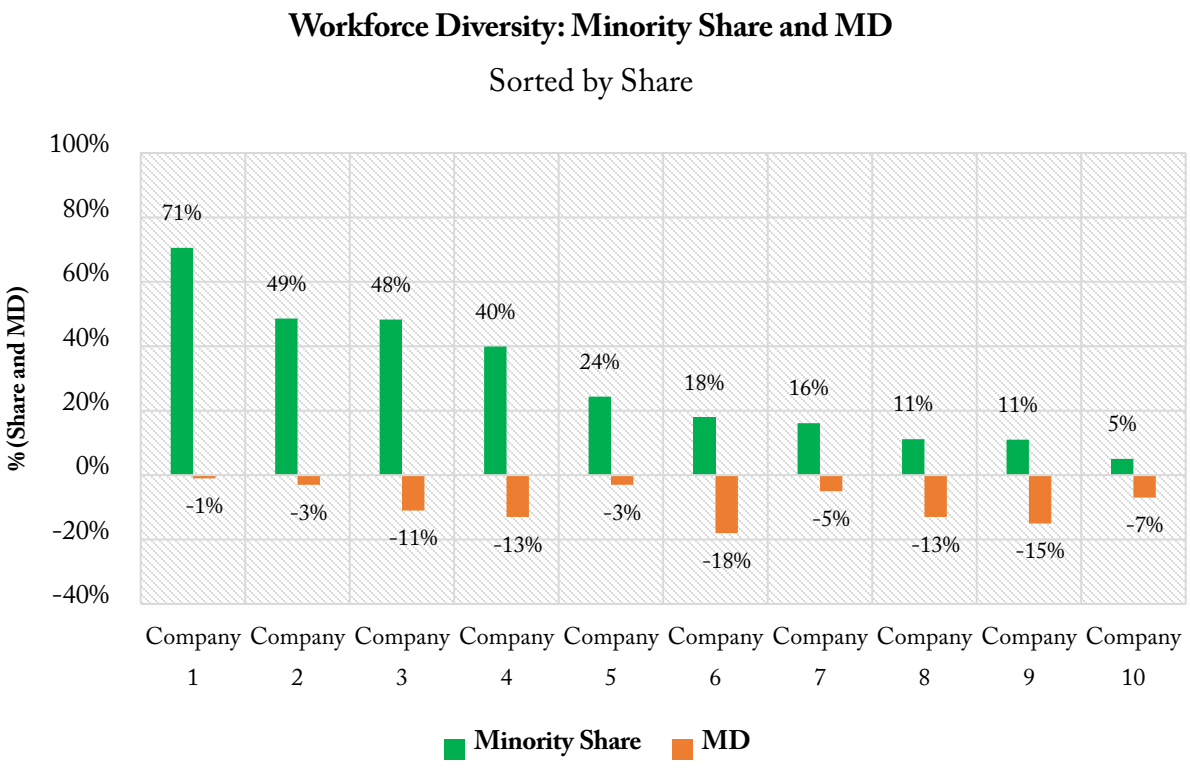

Figure 3-2
Minority diversity part 2: conventional share-based metric + MD pilot metric (sorted by share)

Part 3: Minority Share of the Workforce + MD + MDR

The MDR metric builds on the information provided by the MD metric by measuring the *relative* difference between the minority composition of a company's workforce and the minority composition of the local labor force. By dividing the workforce composition by the labor force composition, the value of the MDR directly shows how much more/less diverse a company is than the labor force.

The MDR metric builds on the MD metric and incorporates context more directly into the measurement of workforce diversity by quantifying relative minority representation.

The MDR metric incorporates context more directly into the measurement of workforce diversity by dividing the minority share of a company's workforce by the minority share of the local labor force. This allows users to interpret the value of the MDR as the relative extent of minority under/overrepresentation, where a value less than one indicates that minorities are underrepresented in the workforce relative to the labor force, a value greater than one indicates overrepresentation, and a value of one indicated equal representation, or complete convergence between the company's workforce and the labor force.

Figure 3-3 shows the conventional minority share of the workforce metric and the MD and MDR pilot metrics. Figure 3-3 is sorted in descending order of the minority share of the workforce. The interpretation of all the metrics is presented in Part 4 below, where the results are sorted by the MDR instead of the minority share of the workforce. This will allow for a more intuitive interpretation.

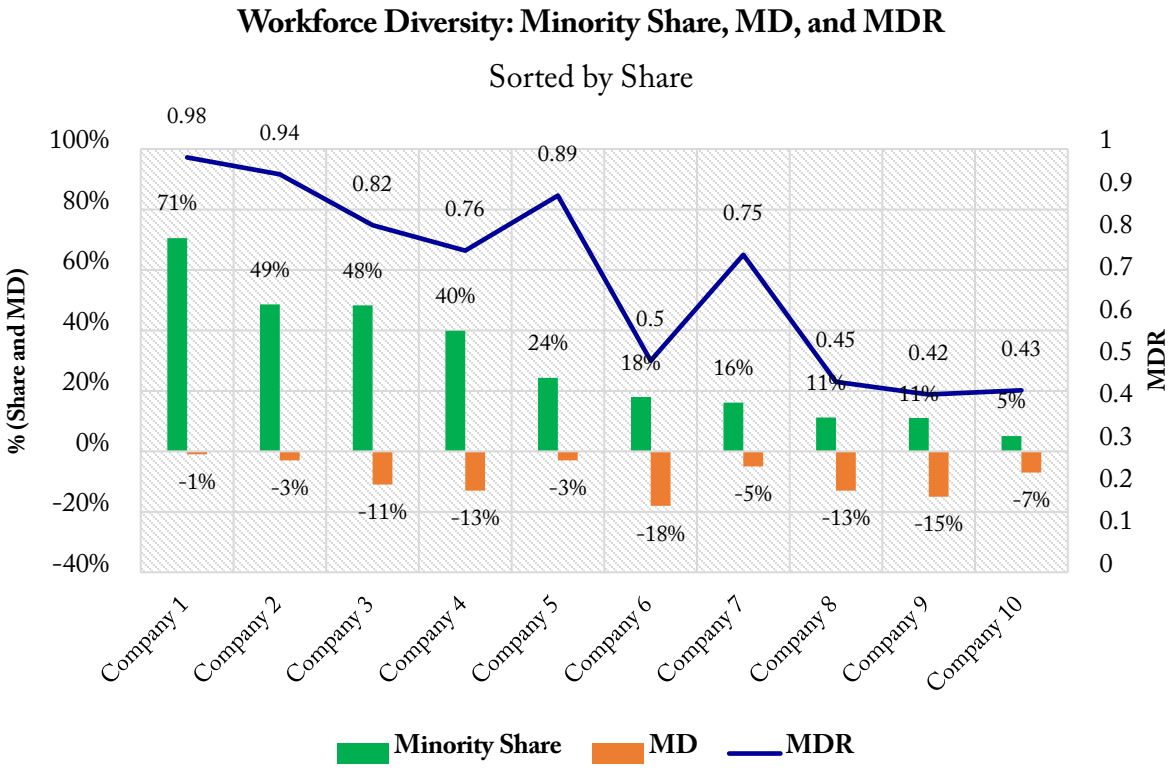

Figure 3-3
Minority diversity part 3: conventional share-based metric + MD pilot metric + MDR pilot metric (sorted by share)

Part 4: Minority Share of the Workforce + MD + MDR Revisited

The MDR metric builds on the information provided by the MD metric by measuring the *relative* difference between the minority composition of a company's workforce and the minority composition of the local labor force. By dividing the workforce composition by the labor force composition, the value of the MDR directly shows how much more/less diverse a company is than the labor force.

Companies 1 and 2 remain in the first and second benchmarked positions regardless of the metric sorted by. However, all but one of the remaining 8 companies changed positions when sorting in descending order of the MDR metric (i.e., more reflective of their communities).

Figure 3-4 shows the conventional minority share of the workforce metric and the MD and MDR pilot metrics. Figure 3-4 is sorted in descending order of the MDR, so that the companies with the most equal relative minority representation appear first in the chart.

The benchmarking results change again from Part 2 described above. Once again, Companies 1 and 2 remain in first and second position, highlighting that their results are robust to the full set of metrics studied. Company 5's benchmarking makes the most significant shift– despite having a 24% minority share of the workforce, they register a relatively low MD of -3%, and further, an MDR of 0.89. This indicates that while Company 5 would not be considered diverse when tracking only the minority share of the workforce metric, they are actually a leading performer when viewing their performance within the context of their local labor force - they have achieved a relatively small minority share gap (as shown by the MD value) and near equal relative minority representation (as shown by the MDR value). Company 7 and Company 10 also shift to sixth, and ninth, respectively. While in contrast, Company 3 and Company 6 now benchmark in the fourth and seventh positions, respectively.

Context-based analysis of workforce diversity can help illuminate the intersection of a company's workforce, its labor force, and its larger community.

These results highlight, once again, that the incorporation of context into measurement of workforce diversity can alter interpretations of performance by accounting for demographic and economic conditions that are omitted by conventional, internally focused share-based metrics. Context-based analysis of workforce diversity can help illuminate the intersection of a company's workforce, its labor force, and its larger community, and serve as a more valuable input to strategic decision making.

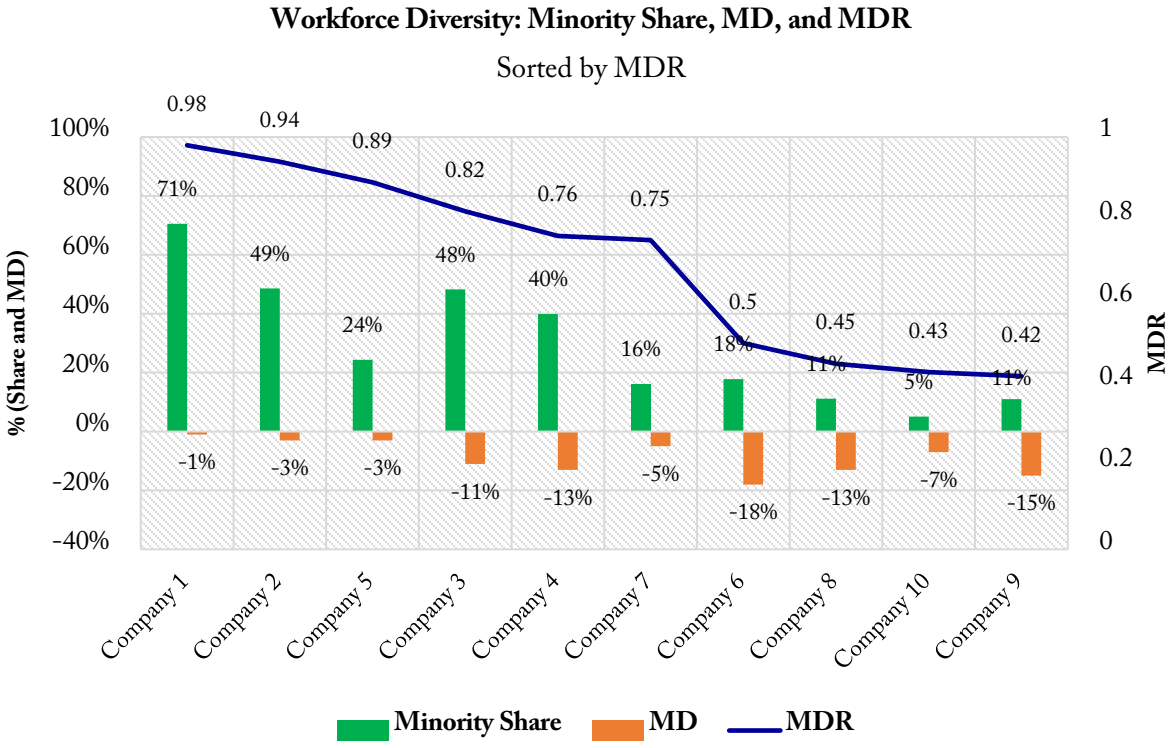

Figure 3-4
Minority diversity part 4: conventional share-based metric + MD pilot metric + MDR pilot metric (sorted by MDR)

Part 5: Minority Share of the Workforce + MD + MDR + MDR^{-1}

The MDR^{-1} metric summarizes a company's performance by building on the information provided by the conventional minority share of the workforce metric, the MD, and the MDR by indicating the magnitude of increase needed in current minority representation to close that gap identified by the MD and bring about convergence between the minority composition of the workforce and the minority composition of the local labor force.

Figure 3-5 shows the same metrics as Figure 3-6. However, all companies with an MDR-1 of 0.5 or less are shaded in blue (MDR$_{-1}$ values not shown on the chart). Company 6 (MDR^{-1} = 2.0), Company 8 (MDR^{-1} = 2.2), Company 10 (MDR^{-1} = 2.3), and Company 9 (MDR^{-1} = 2.4) would need to double or more than double their current minority representation to close the gap identified by the MD and bring about equal relative representation as indicated by the MDR.

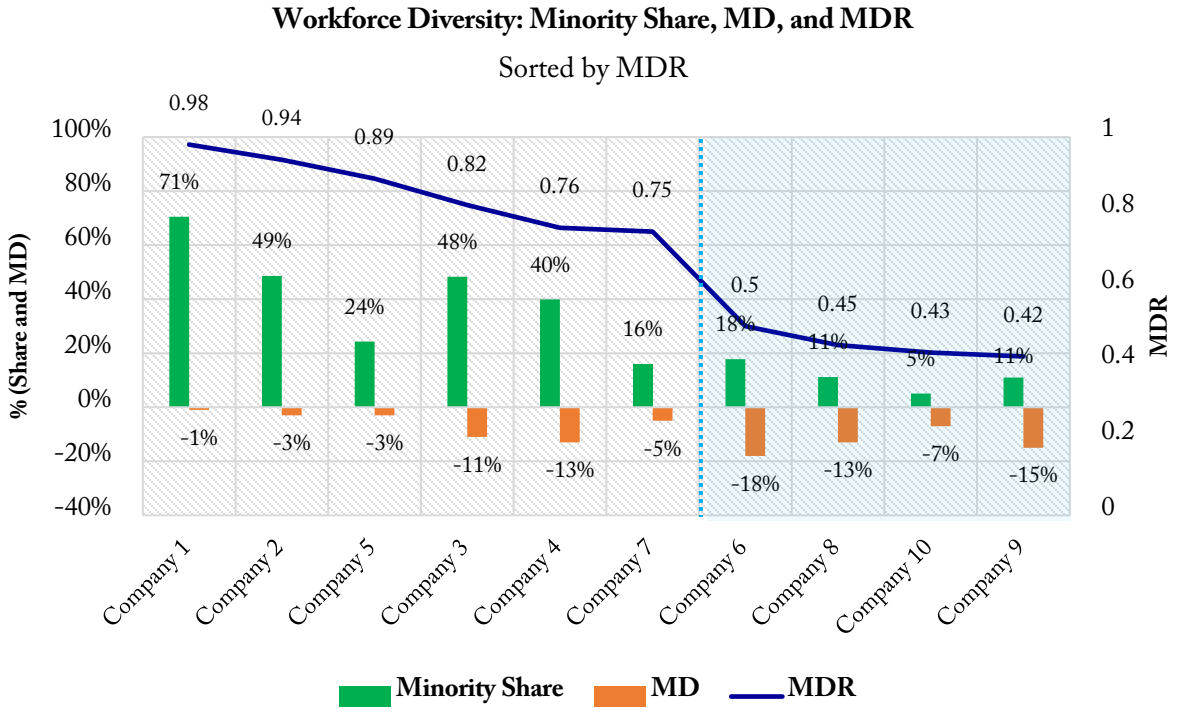

Figure 3-5
Minority diversity part 5: conventional share-based metric + MD pilot metric + MDR pilot metric (sorted by MDR)
Note: Blue box highlights all companies with an MDR^{-1} value of 0.5 or less

Summary Interpretation of All Minority-related Context Metrics

The following summarizes the key information provide by each of the four minority-related metrics just discussed:

1. The minority share of the workforce metric presents a viable and informative starting point for measuring workforce diversity around minorities, where the measurement is exclusively focused internally.
2. The MD introduces context by accounting for the diversity of the local labor force, allowing the user to understand the absolute "gap" between the minority share of the workforce and that of the labor force.
3. The MDR provides an alternative and deeper examination of the "gap" identified by the MD through its multiplicative properties, which allows the user to quantify the relative magnitude of minority under/overrepresentation.
4. The MDR^{-1} builds on the information provided by the MDR to indicate how much a company would need to increase current minority representation to close the gap identified by MD, and become completely reflective of the local labor force, as indicated by the MDR.

Utilizing the metrics together may provide more comprehensive insights than any one metric on its own.

Table 3-1 summarizes this interpretation using Company 6's values as an example. The interpretation of the metrics presented above can be carried over to the results for the gender and age diversity shown below.

Table 3-1
Summary of conventional and context-based workforce diversity metrics

Metric	Information Provided	Example Interpretation Using Company 6
Minority share of the workforce	The minority share of the company's workforce	*18% of Company 6's employees meet the definition of "minority."*
MD	The absolute "gap" between the minority share of the company's workforce and the minority share of their local labor force	*The proportion of minority employees at Company 6 is 50% of the proportion of minorities in their local labor force (i.e., the company would need to double its current minority workforce to reflect the share of the service territories' workforce).*
MDR	The magnitude of over/underrepresentation of minorities in a company's workforce, relative to their local force	*The proportion of minority employees at Company 6 is 50% of the proportion of minorities in their local labor force.* *The minority composition of Company 6's workforce is 50% less than [=(1-MDR)*100] the minority composition of their local labor force.*
MDR^{-1}	The amount by which a company would need to increase current minority representation to close the "gap" identified by MD and achieve equal representation as would be identified by an MDR of 1.	*Company 6 would need to double the current composition of minority employees to "close the gap" and achieve equal representation.*

Context-based analysis of workforce diversity can help illuminate the intersection of a company's workforce, its labor force, and its larger community, therefore serving as a more valuable input to strategic decision making.

Gender Diversity

While the interpretation of the share-based, delta, differential rate, and inverse rate metrics can be carried over to the analysis of gender diversity, the results indicate that the ranges of values are all smaller than for their minority equivalents. Also, there were less changes in relative performance produced by the inclusion of the GD and GDR metrics than the MD and MDR metrics.

Figure 3-6 shows the conventional women share of the workforce metric and the GD and GDR pilot metrics, sorted in descending order of the GDR, so that the companies with the most equal relative women representation appear first in the benchmarking when reading from left to right. However, companies are in descending order of their woman share of the workforce (i.e., Company 1 has the largest women share of the workforce, Company 10 the smallest)[8]. All companies with a GDR^{-1} of 0.5 or less are shaded in blue (GDR^{-1} values not shown on the chart).

All the gender diversity metrics studied are less dispersed than the minority diversity metrics, highlighting that no single participating company stood out in terms of having near equal relative representation of women.

The results illustrate that no company has less than 19% women share of the workforce, and no company has greater than 34% share. In contrast, the minority share ranged from 5% to 71%. The minimum value for the GD (in absolute value) is -14% and the maximum (in absolute value) is -28% The MD ranged from -1% to -18%. The GDR ranges from 0.4 to 0.7, while the MDR ranges from 0.42 to 0.98. As described in Section 2, the data used to conduct the gender diversity analysis captured women aged 20-64, rather than 16+.

All the gender diversity metrics studied are less dispersed than the minority diversity metrics, highlighting that no single participating company stood out in terms of having near equal relative representation of women. This contrasts with the results from the analysis of minority diversity, where Companies 1, 2, and 5 achieve MDRs of 0.98, 0.94, and 0.89, respectively.

As with minority diversity, the inclusion of context changes the overall interpretation of relative performance if the goal is to reflect communities served. However, these changes are less frequent and less pronounced than for minority diversity; only two companies – 3 and 7 – change places, and neither changes more than one place. Once again, Companies 1 and 2 remain benchmarked in the first and second positions, respectively, regardless of which metric the results are sorted by.

[8] Note that Companies 1 through 10 are not the same Companies 1 through 10 shown for minority or age diversity.

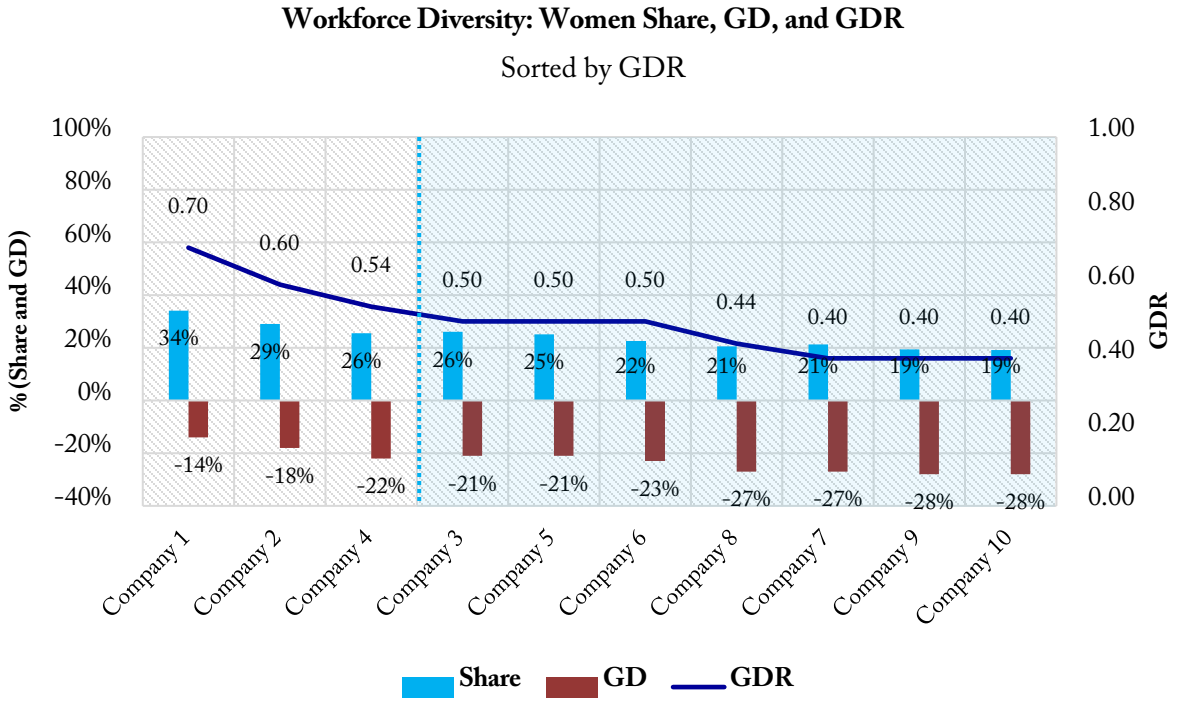

Figure 3-6
Gender diversity recap: conventional share-based metric + GD pilot metric + GDR pilot metric (sorted by GDR)
Note: Blue box highlights all companies with an GDR[1] value of 0.5 or less

Age Diversity

The 25-29 Cohort

The nine companies perform relatively similar to one another according to the 25-29 share of the workforce metric. All nine register negative deltas (AD metric values).

The interpretation of the share-based, delta, differential rate, and inverse rate metrics can also be carried over to the analysis of age diversity. The nine companies[9] perform relatively similar to one another according to the 25-29 share of the workforce metric. The $ADR_{25\text{-}29}$ metric better highlights the dispersion of relative representation across companies.

The results for age diversity are not presented sequentially. Figure 3-7 shows the conventional 25-29 share of the workforce metric and the $AD_{25\text{-}29}$ and $ADR_{25\text{-}29}$ pilot metrics. Figure 3-7 is sorted in descending order of the $ADR_{25\text{-}29}$, so that the companies with the most equal relative representation of 25-29 year-olds appear first in the chart. However, companies are numbered in descending order of their 25-29 share of the workforce (i.e., Company 1 has the largest share of

[9] One company out of 10 did not provide workforce data by age.

25-29 year-olds in their workforce, Company 10 has the smallest)[10]. All companies with an $ADR^{-1}_{25\text{-}29}$ of 0.5 or less are shaded in blue ($ADR^{-1}_{25\text{-}29}$ values not shown on the chart).

The overall interpretation of relative performance changes when sorting by the $ADR_{25\text{-}29}$ metric, if the goal is to reflect communities served. Company 4 sees the biggest change, as it shifts from fourth to second. Company 8 moves to seventh, while Company 2 moves to third, Company 3 moves to fourth, and Company 7 moves to eighth.

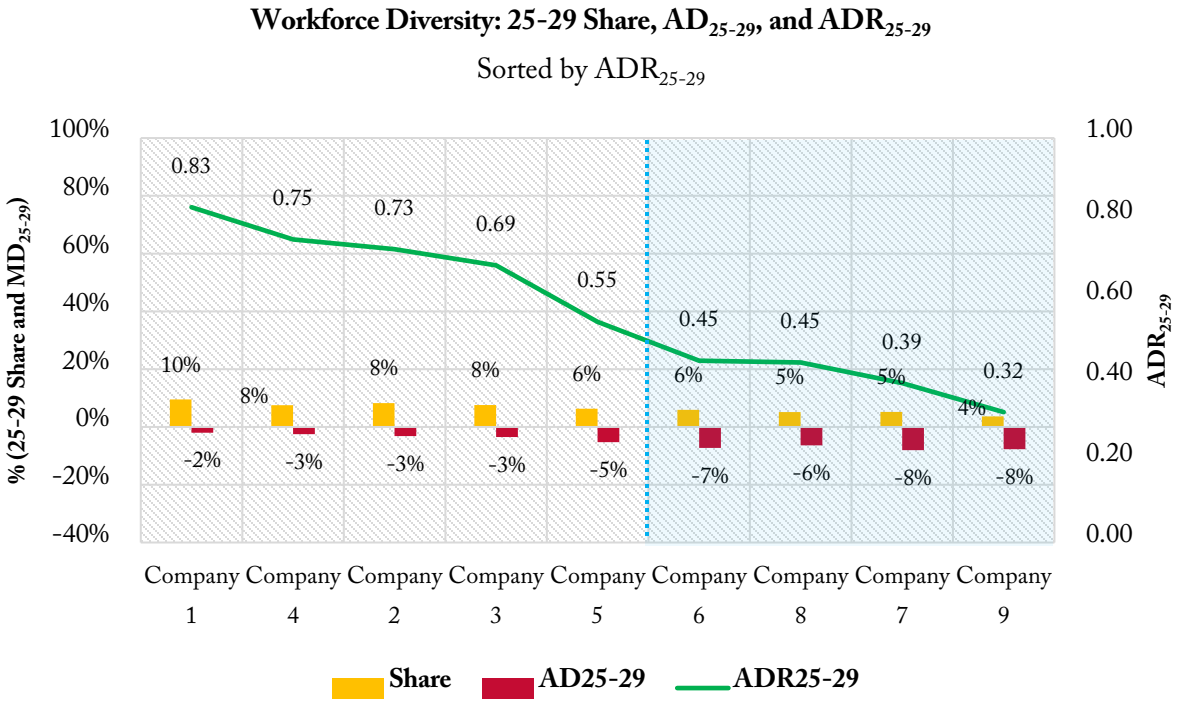

Figure 3-7
Age diversity recap 1: conventional share-based metric + AD25-29 pilot metric + ADR25-29 pilot metric (sorted by $ADR_{25\text{-}29}$)
Note: Blue box highlights all companies with an $ADR^{-1}_{25\text{-}29}$ value of 0.5 or less

[10] Note that Companies 1 through 10 are not the same companies 1 through 10 shown for minority or age diversity.

The 60–64 Cohort

Of the results presented in this report, the only dimension of diversity observed to have relative overrepresentation by any company is for the 60–64 age cohort. All nine companies registered zero or positive values for $AD_{60\text{-}64}$, and $ADR_{60\text{-}64}$ greater than 1. The ranking of the companies does not change when sorting by the $ADR_{60\text{-}64}$ metric.

While 60-64 year-olds are overrepresented at all nine companies, this age cohort is more heavily overrepresented, relative to the local labor force, at Company 1 than any other company.

Figure 3-8 shows the conventional 60–64 share of the workforce metric and the $AD_{60\text{-}64}$ and $ADR_{60\text{-}64}$ pilot metrics. Figure 3-8 is sorted in descending order of the $ADR_{60\text{-}64}$, so that the companies with the largest relative representation of 60–64 year-olds appear first in the chart. However, companies are numbered in descending order of their 60-64 share of the workforce (i.e., the Company 1 has the largest share of 60–64 year-olds in their workforce, Company 10 has the smallest)[11].

In contrast to the other results presented in this report, no changes in relative performance were observed when sorting the results by the $ADR_{60\text{-}64}$ metric, as Company 1 registers the largest share of the workforce, $AD_{60\text{-}64}$, and $ADR_{60\text{-}64}$. While 60–64 year-olds are overrepresented at all nine companies, this age cohort is more heavily overrepresented, relative to the local labor force, at Company 1 than any other company. These results are consistent with anecdotal evidence and highlights a maturing aggregate industry workforce. Further, these results underscore that the all metrics presented in this report illuminate performance at a single point in time, requiring companies to revisit performance over time as a company's workforce and their local labor force evolve, not just due to aging, but to structural changes in education, employment, and retirement trends.

[11] Note that Companies 1 through 10 are not the same companies 1 through 10 shown for minority or age diversity.

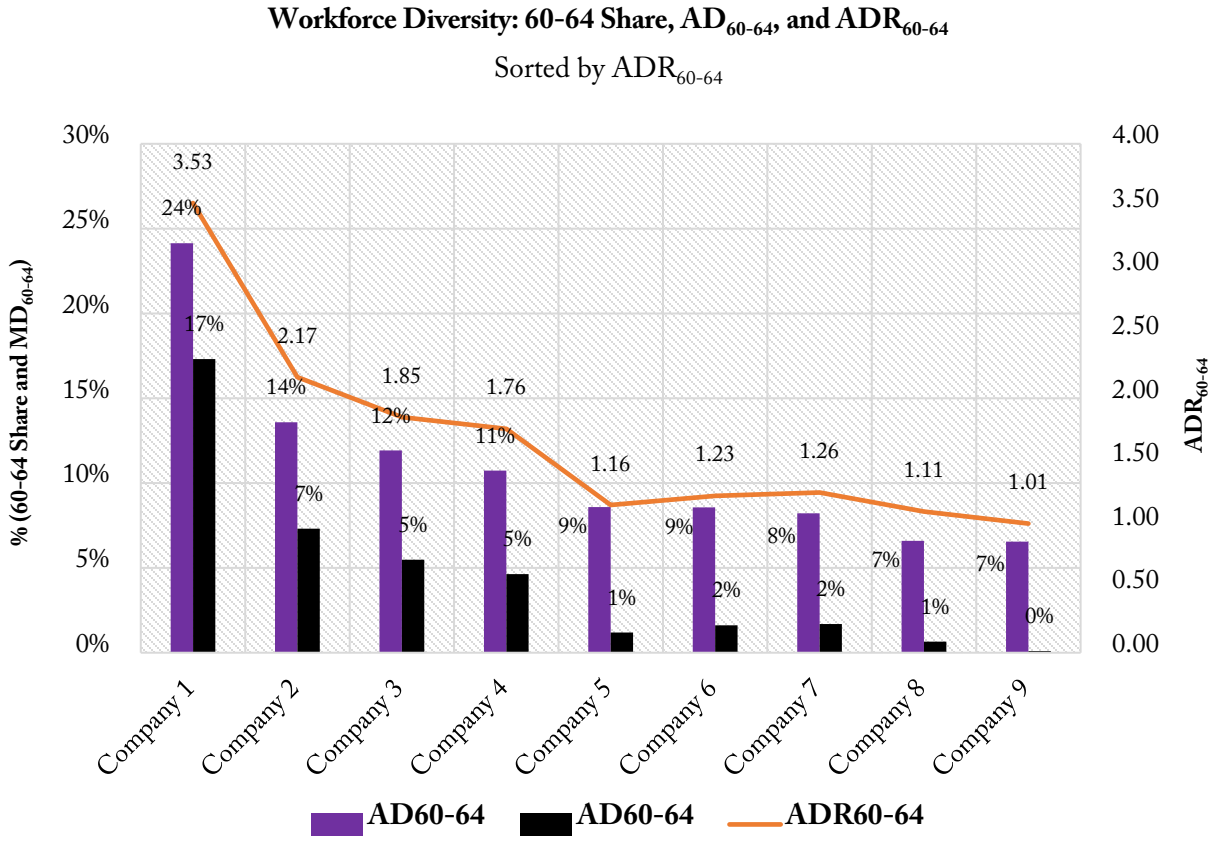

Figure 3-8
Age diversity recap: conventional share-based metric + $AD_{60\text{-}64}$ pilot metric + $ADR_{60\text{-}64}$ pilot metric (sorted by $ADR_{60\text{-}64}$)

Section 4: Limitations and Notes

Like any study utilizing demographic and economic data, this study has several limitations and notes to keep in mind.

- The pilot metrics and all context-based metrics are constrained by data availability. Different datasets can provide insight into different population groups, geographies, and timeframes. The pilot metrics presented in this report are intended to provide a fundamental quantitative estimate of a company's workforce diversity in consideration of local demographic and economic conditions.
- The metrics presented in this research could be further decomposed, to the extent that labor force data is available. For example, a company could calculate a MD or MDR for individual minority population groups (e.g., Asian alone, Black or African American alone) rather than aggregating all minorities.
- Additionally, a company with a multi-state service territory could analyze data and view results on a state-by-state basis rather than at the aggregate, corporate level as presented in this report.
- While a relatively granular level of spatial (e.g., county-level), temporal precision (e.g., 5-year estimates), and demographic (e.g., minority population and age groups) was utilized for the purposes of this pilot, other data sources are available that can provide informative insights at different, more likely less granular, resolutions.
- The pilot metrics do not examine diversity with respect to skill or thought, education, veteran status, or disability status.
- The pilot metrics cannot be used to directly examine, but would be heavily impacted by the underlying drivers of changes in local labor force participation. These include, but not limited to, economic downturns and greater preference for higher education. However, in line with the reasoning presented in Section 2, the labor force will remain the major mechanism by which a company can obtain workers from within the community, and in turn, become reflective of that broader community.
- This research does not examine actions (e.g., investment in STEM education, development of industry-specific curriculums, engagement of women in non-traditional roles organizations) that could help address the gaps illuminated by the results.

Despite these limitations, the insights from this research can inform the decision making of electric power companies seeking to promote diversity, equity, and inclusion in their workforce.

Section 5: Conclusion and Future Research Opportunities

This research sought to provide electric power companies with a practical foundation for utilizing a context-based analytical approach for measuring and interpreting workforce diversity in consideration of local labor force diversity.

Electric power companies have long-established relationships with the customers and communities they serve and operate in, and many are seeking to better understand how to measure and track workforce diversity to build a more innovative workforce and promote equity, both internally and within their communities. Conventional comparisons of workforce diversity percentages without consideration of the demographic composition of the available pool of labor or population can lead to incomplete and potentially misleading conclusions about a company's performance, both in isolation and relative to peers. This research sought to provide electric power companies with a practical foundation for utilizing a context-based analytical approach for measuring and interpreting workforce diversity in consideration of local labor force diversity. The application of the approach and metrics presented in this report can provide companies enhanced insights to inform workforce diversity and equity strategy, above and beyond the information provided by more conventional benchmarking metrics (e.g., minority share of the workforce).

To the extent that structural racism, sexism, or agism influence the underlying economic variables utilized in this CBA, company hiring may be similarly impacted by these drivers.

This research pilots several context-based workforce diversity metrics that were identified and evolved specifically for use by electric power companies. The results of the analysis on minority diversity were presented sequentially to better highlight the key pieces of information provided by each pilot metric and its corresponding conventional metric. The results underscore how accounting for context can change benchmarking position, particularly when analyzing minority and gender diversity, and that using all the metrics together can provide more comprehensive insights than using any one in isolation. Crucially, the metrics presented do not factor in disproportionate education, skills, and/or other opportunities that may exist in the populations measured by the labor force statistics. Nevertheless, a company could use insights from the metrics to inform strategy. For example, a company may engage with local community education groups and/or business interests to advance equity more systemically.

There are future research opportunities to build upon the pilot metrics presented, and for other industry priority sustainability issues.

All metrics presented in this report illuminate performance at a single point in time, requiring companies to revisit performance over time as a company's workforce and their local labor force evolve, not just due to aging, but to structural changes in education, employment, and retirement trends. Further, this inaugural effort on context-based workforce diversity provides a platform for future research applications, including but not limited to analyses that account for skillset or particular skill level of company employees and the local labor force,

consider other dimensions of diversity, and more directly consider service territory characteristics (e.g., majority urban, rural). Finally, when added to the 2019 work on CBMs for water management, this growing foundation of "Next Generation Metrics" work can support additional research on topics where contextualization may help better understand performance on the priority issues of the electric power industry. EPRI plans to pilot CBMs for renewable energy in 2021

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Appendix A: Dataset Dictionary

As described in Section 2, the dataset used for the analysis presented in this report was the ACS 5-year estimates. The following provides a brief summary of various Census Bureau and BLS datasets that contain similar data that could be used for a context-based analysis of workforce diversity. The distinguishing features of each dataset are also provided, including the geographic granularity of each. The list is not exhaustive.

American Community Survey (ACS)

The ACS 1-year and 5-year estimates [4] provide population and labor data. Table A-1 provides the distinguishing features of both datasets. According to the Census Bureau, the 1-year estimates are best used when currency is more important than precision and large populations are being analyzed. In contrast, the 5-year estimates are best used when precision is more important than currency, and when analyzing very small populations that are not available with 1-year estimates.

Table A-1
Distinguishing features of the ACS datasets (directly sourced from Census Bureau) [22]

Feature	1-year Estimates	5-year Estimates
Time Frame Covered	12 months of collected data *Example:* 2018 ACS 1-year estimates collected between January 1, 2018 and December 31, 2018	60 months of collected data *Example:* 2014-2018 ACS 5-year estimates collected between January 1, 2014 and December 31, 2018
Population Sizes Covered	Data for areas with populations of 65,000+	Data for all areas
Sample Size	Smallest sample size	Largest sample size
Reliability/Statistical Accuracy	Less reliable than 3-year or 5-year	Most reliable
Currency of Data	Most current	Least current
Release Frequency	Annually released: 2005-present	Annually released: 2009-present

Despite its level of detail, the ACS 1-year and 5-year estimates [23] do not have LFPR by race and age. Also, as demonstrated in Section 2, a user would have to multiply the LFPR of a given population group to obtain the LFP (not a rate), to allow for aggregation.

Local Area Unemployment Statistics (LAUS) Annual Averages

The Local Area Unemployment Statistics (LAUS) program [24] produces monthly and annual employment, unemployment, and labor force data for Census regions and divisions, States, counties, metropolitan areas, and large cities. The LAUS county level dataset provides annual averages but does not produce estimates by age group, race, or gender like the ACS.

The Expanded State Employment Status Demographic Data from LAUS [24] provides greater detail than the county level estimates described above, as it produces estimates of employment status of the civilian non-institutional population by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age (e.g., 16-19, 20-24). The same estimates are also available intermediate age (e.g., 16-24, 25-54). However, this dataset only provides state level estimates.

A possible work around to obtain an approximation of county level service territory numbers from these state level estimates from this dataset could be to:

1. Identify the population size, x, for each county, i, comprising a service territory.
2. Sum the population size for each county.
3. Divide the aggregate county (service territory) population by the size of the state labor force participation, s, of state k to obtain a total service territory share factor, m, represented by the equation below.
4. Multiply the state level demographic data by m to obtain a service territory-level estimate of demographic diversity for a select population group.

$$m_i = \frac{\sum_{i=1}^{n} x_i}{s_k}$$

where

$$i = 1, 2, 3, \dots, n$$

$$k = \text{AL AK, AZ, } \dots, \text{WY}$$

Employment Projections

The BLS' Employment Projections program develops information about the labor market of the United States for 10 years in the future [25]. This dataset provides national level estimates of the CLF for 1998, 2008, 2018, and 2028. The dataset contains estimates by gender, age cohort, gender and age cohort, and race/ethnicity and gender.

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Electric Power Research Institute
3420 Hillview Avenue, Palo Alto, California 94304-1338 • PO Box 10412, Palo Alto, California 94303-0813 USA
800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com